

particles can be fluorescent particles. The phosphor layer 686 is excited by low velocity electrons travelling from the cathode 684 to the anode 682. Grid electrodes 688 can be used to accelerate and focus the electron beam as well as act as an on/off switch for electrons directed at the phosphor layer 686. An electrically insulating layer is located between anodes 682 and grid electrodes 688. As shown in Fig. 10, the anode should be at least partially transparent to permit transmission of light emitted by phosphor 686.

In the Claims

Please cancel claims 17-29 without prejudice or disclaimer.

Please substitute the following amended claims for those currently pending:

1. A material having a layer, the layer comprising a plurality of self-assembled structures comprising compositions, wherein the structures are localized in separate islands covering a portion of the layer in an integrated assembly.
2. The material of claim 1 wherein the compositions comprise organic compounds.
3. The material of claim 1 wherein the compositions comprise inorganic particles.
4. The material of claim 3 wherein the inorganic particles have an average secondary particle diameter from about 2 nm to about 200 nm.
5. (Amended) The material of claim 3 wherein the inorganic particles have an average secondary particle diameter less than about 100 nm and the primary particles having a distribution in sizes such that at least about 95 percent, of the primary particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.
6. The material of claim 3 wherein the particles include effectively no primary particles with a diameter greater than about a factor of four times the average particle size.
7. The material of claim 3 wherein the particles have an average secondary particle diameter less than about 100 nm, the particles being located within pores of a material in the layer.

8. The material of claim 3 wherein the particles comprise a metal oxide.
9. The material of claim 1 wherein the compositions are attached to the surface with a linker molecule.
10. The material of claim 9 wherein the linker molecule comprises an organic compound with two functional groups.

A10 11. (Amended) The material of claim 1 wherein the particles are fluorescent particles or phosphorescent particles.

12. The material of claim 1 wherein the composition comprises a metal.
13. The material of claim 1 wherein the composition comprises a biological macromolecule.
14. The material of claim 1 wherein the composition has a high index of refraction.
15. A material comprising a self-assembled formation of inorganic particles, the inorganic particles having an average primary particle diameter less than about 100 nm and the particles comprising a composition selected from the group consisting of metal/silicon oxides, metal/silicon carbides, metal/silicon nitrides and elemental metal.
16. The material of claim 15 wherein the primary particles have a distribution in sizes such that at least about 95 percent, of the primary particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

30. An article comprising a plurality of integrated devices wherein at least one device comprises a self-assembled array of compositions.

31. The article of claim 30 wherein the device is a field emission device, a field effect transistor.

- ~~32. The article of claim 30 wherein the device is a battery.~~
- ~~33. The article of claim 30 wherein the device is an optical interconnect.~~
- ~~34. The article of claim 30 wherein the device comprises inorganic particles having an average diameter from about 2 nm to about 100 nm.~~
- ~~35. The article of claim 34 wherein the particles include effectively no particles with a diameter greater than about a factor of four times the average particle size.~~
- ~~36. The article of claim 34 wherein the particles comprise a metal oxide.~~
- ~~37. The article of claim 34 wherein the particles comprise a metal.~~
- ~~38. The article of claim 30 wherein the integrated devices are located in a plurality of interconnected layers.~~
- ~~39. The article of claim 30 wherein the device has a minimum diameter less than about 1 micron.~~
- ~~40. The article of claim 30 wherein the device has a minimum diameter less than about 0.13 microns.~~

Please add new claims 41-53 as follows:

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41. (New) The material of claim 3 wherein the inorganic particles have an average primary particle diameter from about 2 nm to about 100 nm.
42. (New) The material of claim 3 wherein the inorganic particles have an average primary particle diameter from about 12 nm to about 50 nm.
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43. (New) The material of claim 3 wherein the particles are in an ordered array within at least one of the self-assembled islands.

44. (New) The material of claim 1 wherein the plurality of island are located along different levels relative to a plane within the material.

45. (New) The material of claim 15 wherein effectively no primary particles have a diameter greater than about a factor of four times the average primary particle size.

46. (New) The material of claim 15 wherein the inorganic particles have an average primary particle diameter from about 2 nm to about 50 nm.

47. (New) The material of claim 15 wherein the inorganic particles have an average secondary particle diameter from about 20 nm to about 400 nm.

48. (New) The material of claim 15 wherein the inorganic particles are in an ordered array within the self-assembled formation.

49. (New) The material of claim 15 wherein the self-assembled formation is integrated into an integrated assembly.

50. (New) The material of claim 15 wherein the inorganic particles comprise a metal oxide.